2022 GAS LIFT WORKSHOP

Pressure controlled gas lift for mitigating multi-porting

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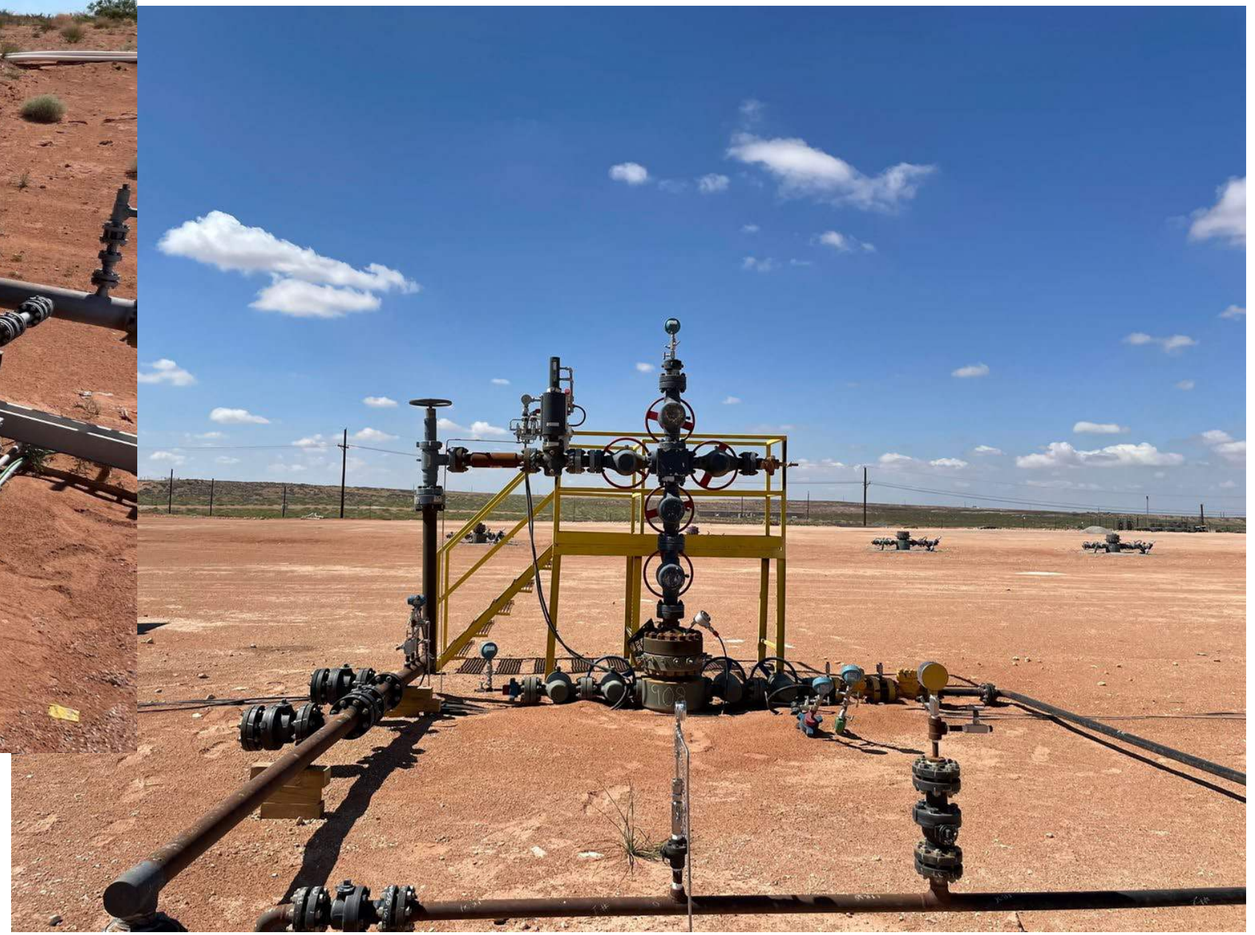
Presentation Outline

- Objective
- Surface equipment
- Injection pressure profile
- Overview of the results
- Challenges and complications

Objective

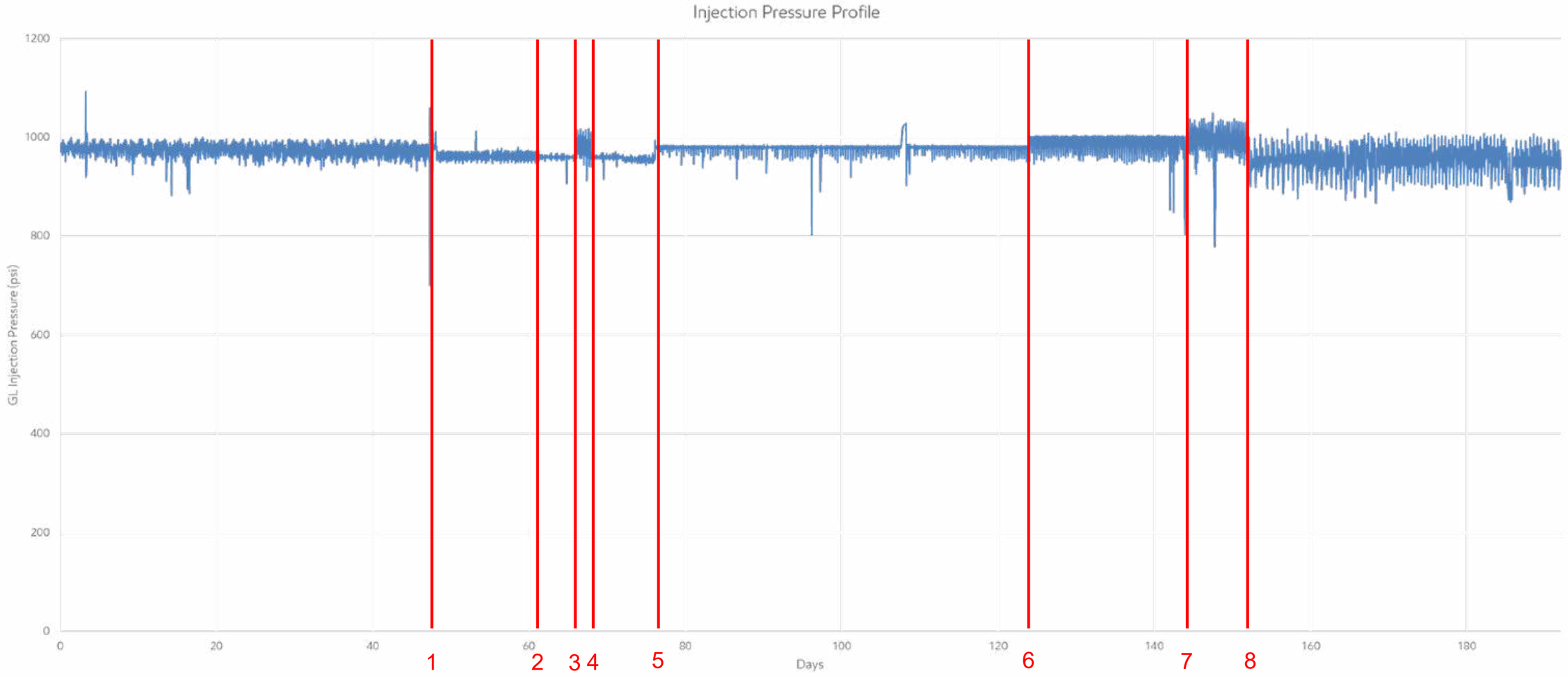
- Develop a model to resolve multi-porting caused by terrain slugging
- Achieve production uplift and optimization through single point lifting
- Utilize existing equipment to avoid additional cost

Surface Setup



Standard conventional Gas lift design

#	Valve Desc.	TVD ft	MD ft	TV F	TCF	Port Size	Ap/Ab	PT psi	Inj. Pass mscf/d	PSC psi	PVC psi	OP psi	PSO psi
13	TP-1	1530	1530	141	0.8502	12/64	0.0950	756	505	1061	1125	1164	1100
12	TP-1	2235	2235	144	0.8455	16/64	0.1660	758	888.7	1020	1112	1182	1090
11	TP-1	2940	2940	147	0.8409	16/64	0.1660	759	888.2	996	1114	1184	1066
10	TP-1	3645	3645	149	0.8378	16/64	0.1660	758	887.7	972	1115	1186	1043
9	TP-1	4350	4350	152	0.8333	16/64	0.1660	756	885.7	948	1114	1185	1019
8	TP-1	5055	5055	154	0.8303	16/64	0.1660	753	883.2	924	1112	1183	995
7	TP-1	5760	5761	156	0.8273	16/64	0.1660	749	880.2	900	1109	1180	971
6	TP-1	6465	6466	158	0.8244	16/64	0.1660	743	877.1	876	1105	1177	948
5	TP-1	7170	7171	159	0.8229	16/64	0.1660	736	872.6	852	1099	1171	924
4	TP-1	7875	7876	161	0.8200	16/64	0.1660	728	867.5	828	1092	1164	900
3	TP-1	8580	8581	162	0.8185	16/64	0.1660	719	861.9	804	1084	1156	876
2	TP-1	9285	9286	162	0.8185	16/64	0.1660	716	853.7	780	1075	1146	851
1	Orifice	9972	9973	163	0.8171	16/64	OV						


Injection Pressure Profile
GL Injection Pressure (psi)
1200
1000
800
600
400
200
0
0
20
40
60
80
100
120
140
160
180
Days
1
2
3
4
5
6
7
8

Data for injection pressure profile

- Point 1 activated the pressure control program
- Point 2 made adjustments to the program to control in a tighter span
- Point 3 turned off pressure control program and operated on rate (well started having large casing swings immediately)
- Points 5-7 trying different pressures to optimize fluid production
- Point 8 reverted well back to rate control

Results

- Pressure controlled gas lift has yielded 15-20% uplift in total liquid produced
- Reduced injection pressure swings by 95%
- Obtained above results without additional equipment investment

Challenges

- Gas lift injection control valve trim and seat that is sized for your needs
- Gas lift injection control valve with adequate response time
- Gas lift injection control system needs to have the ability to be programmed
- Gas lift injection system needs to have adequate amounts of gas and be able to handle large swings in volume

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Thank You

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